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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/827,676	04/06/2001	Tsutomu Tanaka	09792909-4970	6747

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EXAMINER

VU, QUANG D

ART UNIT PAPER NUMBER

2811

DATE MAILED: 11/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/827,676

Applicant(s)

TANAKA ET AL.

Examiner

Quang D Vu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-9, 11, 13 and 14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 4-7, 9, 11, 13 and 14 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Claim Objections

1. Claim 4 is objected to because of the following informalities: The phrase "...without etching" is not clear. The claimed limitation should be changed to "...without etching the protective insulating film". Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 4, 9 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 6,281,552 to Kawasaki et al.

Regarding claim 4, Kawasaki et al. (figures 1A-C, 2A-2C, 6) teach a method of making a bottom-gate thin-film transistor comprising:

forming a gate electrode (102) on a substrate (101);

forming a gate insulating film (105) on the gate electrode;

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forming a laminate comprising a precursor film (106) for an active layer, and a protective spacer film (110) on the gate insulating film, the protective spacer film having a thickness of 100 nm or less;

implanting a dopant in a source-drain region (figure 1C) of the precursor film for the active layer through the protective spacer film without etching the protective spacer film; and

activating the implanted dopant so that a non-doped portion constitutes the active layer (figures 1B-2A; column 7, lines 45-55).

It is inherent that the protective spacer film is a protective insulating film.

Kawasaki et al. disclose a heat treatment step is conducted to activate the impurity elements in the silicon film. It is inherent that the heat treatment step would also recover the defects formed in the protective spacer film. Therefore, Kawasaki et al. inherently disclose the defects formed in the protective spacer film can be recovered after the dopant implanting step in claim 9.

Regarding claim 14, Kawasaki et al. teach a method of making a bottom gate thin film transistor comprising:

forming a gate electrode (102) on a substrate (101);

forming a gate insulating film (105) on the gate electrode;

forming a laminate comprising a precursor film (106) for an active layer, and a protective spacer film (110) on the gate insulating film, the protective spacer film having a thickness of 100 nm or less;

implanting a dopant in a source/drain region (see figure 1C) of the precursor film for the active layer through the protective spacer film without etching the protective spacer film; and

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activating the implanted dopant so that a non-doped portion comprises the active layer (figures 1B-2A; column 7, lines 45-55).

It is inherent that the protective spacer film is a protective insulating film.

Kawasaki et al. disclose a heat treatment step is conducted to activate the impurity elements in the silicon film. It is inherent that the heat treatment step would also recover the defects formed in the protective spacer film. Therefore, Kawasaki et al. inherently disclose the defects formed in the protective spacer film can be recovered after the dopant implanting step.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5-7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasaki et al.

Regarding claim 5, Kawasaki et al. differ from the claimed invention by not showing the active layer comprises a polysilicon film. It would have been obvious to one having ordinary skill in the art at the time the invention was made to select polysilicon film as the active layer, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. In re Leshin, 125 USPQ 416.

Regarding claim 6, Kawasaki et al. teach a method of making a TFT, wherein, in the laminate forming step, an amorphous silicon film is formed on the gate insulating film, the

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amorphous silicon film is crystallized to form a crystallize silicon film, and the protective spacer film is formed on the crystallize silicon film (column 5, line 62 – column 6, line 14). Kawasaki et al. differ from the claimed invention by not showing the crystallize silicon film is a polysilicon film. It would have been obvious to one having ordinary skill in the art at the time the invention was made to select polysilicon film as the crystallize silicon film, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. In re Leshin, 125 USPQ 416.

Regarding claim 7, Kawasaki et al. teach a method of making a TFT, wherein, in the laminate forming step, an amorphous silicon film is formed on the gate insulating film, the protective spacer film is continuously formed on the amorphous silicon film, and then the amorphous silicon film is crystallized to form a crystallize silicon film (column 5, line 62 – column 6, line 14). Kawasaki et al. differ from the claimed invention by not showing the crystallize silicon film is a polysilicon film. It would have been obvious to one having ordinary skill in the art at the time the invention was made to select polysilicon film as the crystallize silicon film, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. In re Leshin, 125 USPQ 416.

Regarding claim 11, Kawasaki et al. teach forming an interlayer insulating film (151), a transparent electrode (161), and an alignment layer (601) on a protective spacer film of the bottom gate thin film transistor to comprise a TFT substrate; and interposing a liquid crystal (605) between the TFT substrate and a counter substrate (602) provide with counter electrode (603) (see figure 6).

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6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasaki et al. in view of US Patent No. 6,420,758 to Nakajima.

Regarding claim 13, Kawasaki et al. teach forming an interlayer insulating film (151) on a protective spacer of the bottom gate thin film transistor (see figure 2C). Kawasaki et al. differ from the claimed invention by not forming an organic EL element driven by the bottom gate thin film transistor on the interlayer insulating film. However, Nakajima teaches forming an organic EL element (3045) driven by the bottom gate thin film transistor on the interlayer insulating film (3042) (see figure 21; column 23, line 24 – column 25, line 62). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Nakajima into the method taught by Kawasaki et al. because the organic EL element improves the quality of the image.

Allowable Subject Matter

Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed 08/20/2002 have been fully considered but they are not persuasive.

It is argued, in page 6 of the remarks, that Kawasaki et al. do not teach or suggest a method of making a bottom gate thin film transistor including the step of implanting a dopant in

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one of an LDD region and a source-drain region of the precursor film for the active layer through the protective insulating film without etching. This argument is not convincing because Kawasaki et al. teach a method of making a bottom gate thin film transistor including the step of implanting a dopant in a source-drain region (see figure 1C) of the precursor film for the active layer through the protective spacer film (110) without etching.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang D Vu whose telephone number is 703-305-3826. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone numbers for the

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organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

QVU

November 4, 2002

Steven Lake